What is claimed is:

1. A device connectable to a network for use in directing data, comprising:

an interface that is provided for interfacing with the network, and that is allocated with a plurality of physical addresses registered for physically discriminating from other devices; and

a processor that executes a receiving process and a transmitting process of data through the interface, wherein

the receiving process comprises the steps of:

receiving data having a physical address indicating a destination of the data;

comparing the physical address of the received data with the registered physical addresses;

completing the receiving process when the physical address of the received data matches with one of the registered physical addresses; and otherwise

canceling the receiving process when the physical address of the received data matches with none of the registered physical addresses, and wherein

the transmitting process comprises the steps of:

detecting a destination of data to be transmitted;

selecting one of the registered physical addresses according to the detected destination of the data to be transmitted; and

attaching the selected physical address to the data,

thereby indicating an origin of the data.

2. The device according to claim 1, wherein the interface is allocated with a first physical address for use in an Internet domain, and a second physical address for use in a local area network domain, and wherein

the processor executes the transmitting process such that the selecting step selects the first physical address when the destination of the data to be transmitted is given as a global IP address, and otherwise selects the second physical address when the destination of the data to be transmitted is given as a private IP address.

3. The device according to claim 2, functioning as a DHCP client in the Internet domain so that the DHCP client is allocated a global IP address from another DHCP server of the Internet domain, and also functioning as a DHCP server in the local area network domain so that the DHCP server allocates a private IP address to another DHCP client in the local area network domain, wherein

the processor uses the first physical address for exchanging data with said another DHCP server of the Internet domain, and uses the second physical address for exchanging data with said another DHCP client of the local area network domain.

4. A network device comprising a port connectable to a

network, a storage section that stores a plurality of physical addresses registered for physically discriminating from other network devices, a receiver section that executes a receiving process of data inputted from the network through the port, a transmitter section that executes a transmitting process of data outputted to the network through the port, and a controller section that controls the receiver section and the transmitter section, wherein

the receiver section operates when receiving data containing a destination physical address indicating a destination of the data for comparing the destination physical address with the stored physical addresses, thereby completing the receiving process when the destination physical address matches with one of the stored physical addresses, and otherwise for canceling the receiving process when the destination physical address matches with none of the stored physical addresses, and wherein

the transmitter section operates when transmitting data to a desired destination for attaching one of the stored physical addresses, which indicates an origin of the dada and which is designated by the controller section dependently on the desired destination of the dada to be transmitted.

5. The network device according to claim 4, wherein the storage section stores a first physical address for use in an Internet domain, and a second physical address for use in

a local area network domain, and wherein

the controller section designates the first physical address when the destination of the data to be transmitted is given as a global IP address, and otherwise designates the second physical address when the destination of the data to be transmitted is given as a private IP address.

6. The network device according to claim 5, functioning as a DHCP client in the Internet domain so that the DHCP client is allocated a global IP address from another DHCP server of the Internet domain, and also functioning as a DHCP server in the local area network domain so that the DHCP server allocates a private IP address to another DHCP client in the local area network domain, wherein

the controller section designates the first physical address for transmitting data to said another DHCP server of the Internet domain, and designates the second physical address for transmitting data to said another DHCP client of the local area network domain.

7. A network device for use in directing data and being connectable to a cable modem having a CATV port and a LAN port, the network device comprising:

a network interface that is connected to the LAN port of the cable modem, and that is allocated with a first physical address selectively used for communication with an outside network interface linked to the CATV port of the

cable modem and a second physical address selectively used for communication with an inside network interface linked to the LAN port of the cable modem; and

a processor that executes a receiving process and a transmitting process of data through the network interface, wherein

the receiving process comprises the steps of:

receiving data having a destination physical address indicating a destination of the data;

detecting when the destination physical address of the received data matches with the first physical address for admitting and treating the received data as being transmitted from an outside network interface linked to the CATV port of the cable modem;

detecting when the destination physical address of the received data matches with the second physical address for admitting and treating the received data as being transmitted from an inside network interface linked to the LAN port of the cable modem; and

detecting when the destination physical address of the received data matches with neither of the first physical address and the second physical address for discarding the received data, and wherein

the transmitting process comprises the steps of:

detecting when a destination of data to be transmitted is an outside network interface linked to the CATV port of the cable modem for selecting and attaching the first

physical address to the data as an origination physical address indicating an origin of the data; and

detecting when a destination of data to be transmitted is an inside network interface linked to the LAN port of the cable modem for selecting and attaching the second physical address to the data as an origination physical address indicating an origin of the data.

8 The network device according to claim 7, wherein the processor executes the receiving process and the transmitting process by the steps of:

receiving data from an inside network interface linked to the LAN port of the cable modem, the data containing a logical address indicating an ultimate destination of the data;

detecting when the logical address indicates the ultimate destination other than inside network interfaces for rewriting a destination physical address contained in the data to another destination physical address allocated to a predetermined outside network interface and for rewriting an origination physical address contained in the data to the first physical address; and

transmitting the data containing the logical address and the rewritten destination physical address and the rewritten origination physical address, and

wherein processor executes the receiving process and the transmitting process by the steps of:

receiving data from an outside network interface linked to the CATV port of the cable modem, the data containing a logical address indicating an ultimate destination of the data;

detecting when the logical address is allocated to an inside network interface for rewriting a destination physical address contained in the data to another destination physical address allocated to the inside network interface corresponding to the logical address and for rewriting an origination physical address contained in the data to the second physical address; and

transmitting the data containing the logical address and the rewritten destination physical address and the rewritten origination physical address.

9. The network device according to claim 8, wherein the processor executes the transmitting process such that the detecting step detects when the logical address contained in the data represents a global IP address for rewriting a destination physical address to another destination physical address allocated to a CATV center and for rewriting an origination physical address contained in the data to the first physical address, and otherwise detects when the logical address represents a private IP address allocated to an inside network interface for rewriting a destination physical address contained in the data to another destination physical address allocated to the inside network

interface corresponding to the private IP address and for rewriting an origination physical address contained in the data to the second physical address.

10. The network device according to claim 9, functioning as a DHCP client in an Internet domain so that the DHCP client is allocated a global IP address from another DHCP server of the CATV center, and also functioning as a DHCP server in a local area network domain so that the DHCP server allocates a private IP address to an inside network interface linked to the LAN port of the cable modem, wherein

the processor uses the first physical address for exchanging data with the CATV center, and uses the second physical address for exchanging data with the inside network interface.

11. A computer network system composed of a plurality of node devices including a device connectable to a network for use in directing data, the device comprising:

an interface that is provided for interfacing with the network, and that is allocated with a first physical address for use in an Internet domain, and a second physical address for use in a local area network domain so as to physically discriminate the device from other node devices; and

a processor that executes a receiving process and a transmitting process of data through the interface, wherein

the receiving process comprises the steps of:

receiving data having a physical address indicating a destination of the data;

comparing the physical address of the received data with the first and second physical addresses;

completing the receiving process when the physical address of the received data matches with either of the first and second physical addresses; and otherwise

canceling the receiving process when the physical address of the received data matches with neither of the first and second physical addresses, and wherein

the transmitting process comprises the steps of:

detecting a destination of data to be transmitted;

selecting the first physical address when the destination of the data to be transmitted is given as a global IP address and otherwise selecting the second physical address when the destination of the data to be transmitted is given as a private IP address which indicates another node device involved in the computer network system; and

attaching the selected physical address to the data, thereby indicating an origin of the data.

12. A computer network system composed of a plurality of node devices including a network device comprising a port connectable to a network, a storage section that stores a first physical address for use in an Internet domain, and a second physical address for use in a local area network

domain so as to physically discriminate the network device from other node devices, a receiver section that executes a receiving process of data inputted from the network through the port, a transmitter section that executes a transmitting process of data outputted to the network through the port, and a controller section that controls the receiver section and the transmitter section, wherein

the receiver section operates when receiving data containing a destination physical address indicating a destination of the data for comparing the destination physical address with the first and second physical addresses, thereby completing the receiving process when the destination physical address matches with either of the first and second physical addresses, and otherwise for canceling the receiving process when the destination physical address matches with neither of the first and second physical addresses, wherein

the transmitter section operates when transmitting data to a desired destination for attaching one of the first and second physical addresses, which indicates an origin of the dada and which is designated by the controller section, and wherein

the controller section designates the first physical address when the desired destination of the data to be transmitted is given as a global IP address, and otherwise designates the second physical address when the designated destination of the data to be transmitted is given as a

private IP address which indicates another node device involved in the computer network system.

13. A computer network system comprising a cable modem having a CATV port and a LAN port, and a plurality of internal devices being connectable to the LAN port of the cable modem, the system including a network device for use in directing data, wherein the network device comprising:

a network interface that is connected to the LAN port of the cable modem, and that is allocated with a first physical address selectively used for communication with an external device linked to the CATV port of the cable modem and a second physical address selectively used for communication with an internal device linked to the LAN port of the cable modem; and

a processor that executes a receiving process and a transmitting process of data through the network interface, wherein

the receiving process comprises the steps of:

receiving data having a destination physical address indicating a destination of the data;

detecting when the destination physical address of the received data matches with the first physical address for admitting and treating the received data as being transmitted from an external device linked to the CATV port of the cable modem;

detecting when the destination physical address of

the received data matches with the second physical address for admitting and treating the received data as being transmitted from an internal device linked to the LAN port of the cable modem; and

detecting when the destination physical address of the received data matches with neither of the first physical address and the second physical address for discarding the received data, and wherein

the transmitting process comprises the steps of:

detecting when a destination of data to be transmitted is an external device linked to the CATV port of the cable modem for selecting and attaching the first physical address to the data as an origination physical address indicating an origin of the data; and

detecting when a destination of data to be transmitted is an internal device linked to the LAN port of the cable modem for selecting and attaching the second physical address to the data as an origination physical address indicating an origin of the data.

14. A method of directing data in a network by use of an interface that is provided for interfacing with the network and that is allocated with a plurality of physical addresses registered for physically discriminating from other devices, the method executing a receiving process and a transmitting process of data through the interface, wherein

the receiving process comprises the steps of:

receiving data having a physical address indicating a destination of the data;

comparing the physical address of the received data with the registered physical addresses;

completing the receiving process when the physical address of the received data matches with one of the registered physical addresses; and otherwise

canceling the receiving process when the physical address of the received data matches with none of the registered physical addresses, and wherein

the transmitting process comprises the steps of:

detecting a destination of data to be transmitted;

selecting one of the registered physical addresses according to the detected destination of the data to be transmitted; and

attaching the selected physical address to the data, thereby indicating an origin of the data.

15. A method of operating a network device having a port connectable to a network, a storage that stores a plurality of physical addresses registered for physically discriminating from other network devices, a receiver that executes a receiving process of data inputted from the network through the port, a transmitter that executes a transmitting process of data outputted to the network through the port, and a controller that controls the

receiver and the transmitter, the method comprising the steps of:

operating the receiver when receiving data containing a destination physical address indicating a destination of the data for comparing the destination physical address with the stored physical addresses, thereby completing the receiving process when the destination physical address matches with one of the stored physical addresses, and otherwise canceling the receiving process when the destination physical address matches with none of the stored physical addresses; and

operating the transmitter when transmitting data to a desired destination for attaching one of the stored physical addresses, which indicates an origin of the dada and which is designated by the controller dependently on the desired destination of the dada to be transmitted.

16. A method of directing data through a network by means of a network device being connectable to a cable modem having a CATV port and a LAN port, the network device having a network interface that is connected to the LAN port of the cable modem and that is allocated with a first physical address selectively used for communication with an outside network interface linked to the CATV port of the cable modem and a second physical address selectively used for communication with an inside network interface linked to the LAN port of the cable modem, the method executing a

receiving process and a transmitting process of data through the network interface, wherein

the receiving process comprises the steps of:

receiving data having a destination physical address indicating a destination of the data;

detecting when the destination physical address of the received data matches with the first physical address for admitting and treating the received data as being transmitted from an outside network interface linked to the CATV port of the cable modem;

detecting when the destination physical address of the received data matches with the second physical address for admitting and treating the received data as being transmitted from an inside network interface linked to the LAN port of the cable modem; and

detecting when the destination physical address of the received data matches with neither of the first physical address and the second physical address for discarding the received data, and wherein

the transmitting process comprises the steps of:

detecting when a destination of data to be transmitted is an outside network interface linked to the CATV port of the cable modem for selecting and attaching the first physical address to the data as an origination physical address indicating an origin of the data; and

detecting when a destination of data to be transmitted is an inside network interface linked to the LAN port of the

cable modem for selecting and attaching the second physical address to the data as an origination physical address indicating an origin of the data.

17. A machine readable medium for use in an interface having a CPU for directing data in a network through the interface that is provided for interfacing with the network and that is allocated with a plurality of physical addresses registered for physically discriminating from other devices, the medium containing program instructions executable by the CPU to perform a receiving process and a transmitting process of data through the interface, wherein

the receiving process comprises the steps of:

receiving data having a physical address indicating a destination of the data;

comparing the physical address of the received data with the registered physical addresses;

completing the receiving process when the physical address of the received data matches with one of the registered physical addresses; and otherwise

canceling the receiving process when the physical address of the received data matches with none of the registered physical addresses, and wherein

the transmitting process comprises the steps of:

detecting a destination of data to be transmitted;

selecting one of the registered physical addresses according to the detected destination of the data to be

transmitted; and

attaching the selected physical address to the data, thereby indicating an origin of the data.

18. A machine readable medium for use in a network device having a port connectable to a network, a storage that stores a plurality of physical addresses registered for physically discriminating from other network devices, a receiver that performs a receiving process of data inputted from the network through the port, a transmitter that performs a transmitting process of data outputted to the network through the port, and a processor that controls the receiver and the transmitter, the medium containing program instructions executable by the processor for causing the network device to perform a method comprising the steps of:

controlling the receiver when receiving data containing a destination physical address indicating a destination of the data for comparing the destination physical address with the stored physical addresses, thereby completing the receiving process when the destination physical address matches with one of the stored physical addresses, and otherwise canceling the receiving process when the destination physical address matches with none of the stored physical addresses; and

controlling the transmitter when transmitting data to a desired destination for attaching one of the stored physical addresses, which indicates an origin of the dada

and which is designated by the processor dependently on the desired destination of the dada to be transmitted.

19. A machine readable medium for use in a network device having a CPU for directing data through a network by the network device being connectable to a cable modem having a CATV port and a LAN port, the network device having a network interface that is connected to the LAN port of the cable modem and that is allocated with a first physical address selectively used for communication with an outside network interface linked to the CATV port of the cable modem and a second physical address selectively used for communication with an inside network interface linked to the LAN port of the cable modem, the medium containing program instructions executable by the CPU for causing the network device to perform a receiving process and a transmitting process of data through the network interface, wherein

the receiving process comprises the steps of:

receiving data having a destination physical address indicating a destination of the data;

detecting when the destination physical address of the received data matches with the first physical address for admitting and treating the received data as being transmitted from an outside network interface linked to the CATV port of the cable modem;

detecting when the destination physical address of the received data matches with the second physical address

for admitting and treating the received data as being transmitted from an inside network interface linked to the LAN port of the cable modem; and

detecting when the destination physical address of the received data matches with neither of the first physical address and the second physical address for discarding the received data, and wherein

the transmitting process comprises the steps of:

detecting when a destination of data to be transmitted is an outside network interface linked to the CATV port of the cable modem for selecting and attaching the first physical address to the data as an origination physical address indicating an origin of the data; and

detecting when a destination of data to be transmitted is an inside network interface linked to the LAN port of the cable modem for selecting and attaching the second physical address to the data as an origination physical address indicating an origin of the data.

20. A device connectable to a network for use in directing data, comprising:

interface means for interfacing with the network, the interface means being allocated with a plurality of physical addresses registered for physically discriminating from other devices; and

processor means including receiving means for executing a receiving process of data through the interface

means and transmitting means for executing a transmitting process of data through the interface means, wherein

the receiving means comprises means for receiving data having a physical address indicating a destination of the data, means for comparing the physical address of the received data with the registered physical addresses, means for completing the receiving process when the physical address of the received data matches with one of the registered physical addresses, and means for canceling the receiving process when the physical address of the received data matches with none of the registered physical addresses, and wherein

the transmitting means comprises means for detecting a destination of data to be transmitted, means for selecting one of the registered physical addresses according to the detected destination of the data to be transmitted, and means for attaching the selected physical address to the data, thereby indicating an origin of the data.

21. A network device comprising port means connectable to a network, storage means for storing a plurality of physical addresses registered for physically discriminating from other network devices, receiver means for executing a receiving process of data inputted from the network through the port means, transmitter means for executing a transmitting process of data outputted to the network through the port means, and controller means for controlling

the receiver means and the transmitter means, wherein

the receiver means operates when receiving data containing a destination physical address indicating a destination of the data for comparing the destination physical address with the stored physical addresses, thereby completing the receiving process when the destination physical address matches with one of the stored physical addresses, and otherwise for canceling the receiving process when the destination physical address matches with none of the stored physical addresses, and wherein

the transmitter means operates when transmitting data to a desired destination for attaching one of the stored physical addresses, which indicates an origin of the dada and which is designated by the controller means dependently on the desired destination of the dada to be transmitted.

22. A network device for use in directing data and being connectable to a cable modem having a CATV port and a LAN port, the network device comprising:

network interface means being connected to the LAN port of the cable modem, and being allocated with a first physical address selectively used for communication with an outside network interface linked to the CATV port of the cable modem and a second physical address selectively used for communication with an inside network interface linked to the LAN port of the cable modem; and

processor means including receiving means for

executing a receiving process of data through the network interface means and transmitting means for transmitting process of data through the network interface means, wherein

the receiving means comprises:

means for receiving data having a destination physical address indicating a destination of the data;

means for detecting when the destination physical address of the received data matches with the first physical address for admitting and treating the received data as being transmitted from an outside network interface linked to the CATV port of the cable modem;

means for detecting when the destination physical address of the received data matches with the second physical address for admitting and treating the received data as being transmitted from an inside network interface linked to the LAN port of the cable modem; and

means for detecting when the destination physical address of the received data matches with neither of the first physical address and the second physical address for discarding the received data, and wherein

the transmitting means comprises:

means for detecting when a destination of data to be transmitted is an outside network interface linked to the CATV port of the cable modem for selecting and attaching the first physical address to the data as an origination physical address indicating an origin of the data; and

means for detecting when a destination of data to be

transmitted is an inside network interface linked to the LAN port of the cable modem for selecting and attaching the second physical address to the data as an origination physical address indicating an origin of the data.